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10/574,484	10/25/2006	Johannes Petrus Zijp	1328-29	9138

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EXAMINER	
NGUYEN, KHANH TUAN	
ART UNIT	PAPER NUMBER
1796	
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04/21/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/574,484	ZIJP ET AL.	
	Examiner	Art Unit	
	KHANH T. NGUYEN	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 March 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-12 and 15-24* is/are pending in the application.

4a) Of the above claim(s) *15-19* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 3-12, and 20-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Final

Response to Amendment

1. The amendment filed on 03/09/2009 is entered and acknowledged by the Examiner. Claims 1, 3-12, and 15-24 are currently pending in the instant application with non-elected claims 15-19 withdrawn from further consideration. Claims 2 and 13-14 have been canceled.

Claim Status

2. The rejection of claims 1, 3-6, 8-12, and 20-24 under 35 U.S.C. 103(a) as being unpatentable over JP Pub. 08-043840 (Fukuyoshi) is withdrawn in view of applicant's amendment. The rejection of claims 2, 13, and 14 is rendered moot in view of the instant cancellation.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 23 and 24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In the instant case, method claims 23 and 24 are improperly dependent on product (i.e. coating) claim 1.

(Previously Rejected)

Claim Rejections - 35 USC § 102

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. The amendment to claimed 1 has been noted by the examiner. The examiner further noted that nowhere in claim 1 requires the first film to be the layer closest to the substrate as argued (See Remark page 6, Paragraph 2 and Paragraphs 3).

6. Claim Interpretation: Claim 1 is directed towards a coating comprising of two films that are applied on top of each other with each film comprising a transparent conducting oxide and an electron donor, wherein one film (first film) has a thickness of 50-500 nm and another film (second film) has a thickness of 300-900 nm with at least 10 % less electron donor.

7. The rejection of claims 1, 3-11, and 20-23 under 35 U.S.C. 102(b) as being anticipated by JP Pub. 2000-252500 (Yoshimi) is maintained for the reasons therein.

8. Claims 1, 3-11, and 20-23 are rejected under 35 U.S.C. 102(b) as being anticipated by JP Pub. 2000-252500 (Yoshimi).

With respect to claims 1, 3-11, and 20-23, Yoshimi teaches at drawing 1 a transparent electrode 10 comprising of a double-layer structure is formed on a glass substrate 1 [0035]. The transparent electrode double-layer comprises a first transparent

conducting film 101 and a second transparent conducting film 102 that is applied on top of each other [0035] and may be used as a solar cell [0002]. Yoshimi teaches the first and second transparent conducting film consists of at least one of ITO, SnO_2, and ZnO as a main ingredient [0012]. In one embodiment, Yoshimi teaches the first transparent conducting film 101 is form from 800 nm thick SnO_2 under ordinary pressure and contains 1.0 mol. % (i.e. atomic %) of fluorine (F) dopant, i.e. electron donor [0036]. Yoshimi also teaches the second transparent conducting film 102 is form from 200 nm thick SnO_2 under ordinary pressure and contains 1.5 mol. % (i.e. atomic %) of fluorine (F) dopant, i.e. electron donor [0037]. The second transparent conducting film 102 may have an average thickness of 50-500 nm [0018]. The second transparent conducting film 102 of Yoshimi is considered to read on the first claimed film and the first transparent conducting film 101 of Yoshimi is considered to read on the second claimed film. The transparent electrode 10 comprising of first transparent conducting film 101 and second transparent conducting film 102 is readable on the claimed coating.

The reference specifically or inherently meets each of the claimed limitations in their broadest interpretations. The reference is anticipatory.

(New Ground of Rejections)

Claim Rejections - 35 USC § 103

9. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

10. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP Pub. 2000-252500 (Yoshimi).

Yoshimi teaches the first transparent conducting film 101 (i.e. second film) is form from 800 nm thick SnO_2 under ordinary pressure and contains 1.0 mol. % (i.e. atomic %) of fluorine (F) dopant, i.e. electron donor [0036]. Yoshimi also teaches when forming a transparent electrode with a heat CVD method, the crystal grain diameter (crystal particle size) and crystal orientation axis of a transparent conducting film of polycrystal can be adjusted with a type of gas, a gas mixture ratio, a gas mass flow, forming temperature, forming pressure, etc. [0021].

Although, Yoshimi does not expressly suggest the second film containing a crystal having an average particle size 50-500 nm as recited in claim 12. Nonetheless, the examiner takes the position that it would have been obvious to a skilled artisan to formulate the first transparent conducting film 101 (i.e. second film) of Yoshimi with a crystal size within the claimed range since Yoshimi expressly suggest a process for adjusting the crystal grain diameter (crystal particle size) and crystal orientation axis of the transparent conducting film. Moreover, applicant has not submitted factual evidence showing that the claimed average particle size of crystals recited in the instant claim materially affects the instant invention. Applicant has not provided the criticality of their composition wherein the average particle size of crystals is different from those of Yoshimi.

11. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP Pub. 2000-252500 (Yoshimi) as applied to the above claims, and further in view of U.S Pat. 5,078,803 (hereinafter refer to as Pier) and U.S. 6,320,117 B1 (hereinafter refer to as Campbell).

Yoshimi is relied upon as set forth above. With respect to instant claim 24, Yoshimi teaches a method of applying a transparent electrode double-layer comprises of film 101 on to a substrate 1 and applying to the top of film 101 a second film 102 that on top of film 101 (Fig. 1; [0035]). Yoshimi teaches film 101 is form from 800 nm thick SnO_2 under ordinary pressure and contains 1.0 mol. % (i.e. atomic %) of fluorine (F) dopant, i.e. electron donor [0036]. The second film 102 is form from 200 nm thick SnO_2 under ordinary pressure and contains 1.5 mol. % (i.e. atomic %) of fluorine (F) dopant, i.e. electron donor [0037]. The second film 102 may have an average thickness of 50-500 nm [0018].

Yoshimi does not disclose a method for applying the applying a film mixture to the substrate and the first film is formed, after which the second mixture is applied to the top side of the first film and the second film (i.e. a film having at least 10 % less electron donor than the first film) is formed. In other words, Yoshimi does not disclose a method of forming a double-layer film wherein the film closest to the substrate contains 10 % more electron donor.

In an analogous art, Pier teaches multiple-layer transparent conductors useful in solar cell (Col. 4, lines 44-51). The multiple-layer transparent conductors comprising of a combination of at least two transparent conductors wherein one layer is designed to

maximize the optical properties and at least one layer designed to maximize the electrical properties (Col. 5, lines 4-9). Pier teaches at least one of these layers comprises a hazy zinc oxide (Col. 5, lines 9-12). In one embodiment, Pier suggests both layers comprises of ZnO (Col. 11, lines 60-65). Pier also suggests that the first ZnO layer is hazy (Col. 11, lines 62-64) and may have a thickness on the order of 0.75-3 micron, 750-3000 nm, (Col. 7, lines 40-46) and the other ZnO layer is about 0.5 micron thick, 500 nm thick (Col. 11, line 65). Pier further suggests the level of dopants in the ZnO layer produced an optical effect on the resultant product, in particular, at low doping levels the ZnO acted as a textured anti-reflection (AF) coating and at a higher doping levels the layer tend to serve as a reflector and/or absorber (Col. 11, lines 2-7).

Pier failed to expressly suggest method wherein the higher level doped oxide layer is closest to the substrate.

However, Campbell teaches it is desirable that the outer conductive layer (i.e. second transparent conductor layer 150) be as anti-reflective as possible and the inner conductive layer (i.e. first conductor layer 120) is reflective to allow the maximum amount of sunlight to be absorbed through solar cell 100 (Col. 8, line 64 to Col. 9, 4). Campbell also teaches the second transparent conductor layer 150 is thicker than or same as the first conductor layer 120 (Col. 8, lines 51-53), wherein the first conductor layer 120 has a thickness of about one-half microns (Col. 5, lines 60-67).

Therefore, it would have been obvious to a skilled artisan to modify the method of preparing the transparent electrode double-layer (coating) of Yoshimi by forming reflective layer (film 102 of Yoshimi) on top of the substrate to form an inner layer as

suggested by Campbell that contains a higher level of dopant as suggested by Pier wherein the dopant concentration is 1.5 mol. % of fluorine as suggested by Yoshimi. It would have also been obvious to a skilled artisan to form an anti-reflective layer (film 101 of Yoshimi) as an outer layer as suggested by Campbell that contains a lower dopant level than the inner reflective layer as suggested by Pier having a dopant concentration of 1.0 mol. % of fluorine as suggested by Yoshimi in order to allow the maximum amount of sunlight to be absorbed through solar cell as suggested by Campbell.

Response to Arguments

12. The examiner would like to first point out that the Office Action mailed 09/11/2008 was not based upon two anticipation rejections as alleged by applicant nor were both rejections based on obviousness as argued (See remark page 5, Paragraph 3).

13. Applicant's arguments filed 03/09/2009 have been fully considered but they are not persuasive.

In response to the applicant's remark on Page 6 (Paragraph 2 and Paragraph 3), Applicant argues that Yoshimi does not anticipate the claimed coating composition because Yoshimi does not teach or suggest the layer closest to the substrate (i.e. film 101 of Yoshimi) having a higher concentration of electron donor. Based on this rational, the applicant concluded that Yoshimi teaches away from the claimed invention. The examiner respectfully disagrees with the applicant's argument.

As stated above at point 5, nowhere in claim 1 (and dependent claims 3-12, 20-23) requires or suggest that the first film should be the layer closest to the substrate as argued. Moreover, one of ordinary skill in the art can not equate the phase "first film" as recited in the instant claim to suggest the film is located closet to the substrate and likewise equate the phase "second film" to suggest the film to be located furthest from the substrate. In other words, the claimed invention does not limit the location of the first film and second film with respect to the substrate.

Based on the above rational, it is believed that the claimed limitations are met by Yoshimi reference and therefore, the rejection is maintained.

Conclusion

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to KHANH T. NGUYEN whose telephone number is (571) 272-8082. The examiner can normally be reached on Monday-Friday 7:00-4:00 EST PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (571) 272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark Kopec/
Primary Examiner, Art Unit 1796

/KTN/
Examiner
04/17/2009